



Rainwater harvesting Gracias a Dios, Nicaragua

A project to help a small rural community address their urgent need for water



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Project summary

The rainwater harvesting project at Gracias a Dios follows on from two other successful projects in the community of San Jacinto in 2005 and 2006. Gracias a Dios is a small, impoverished rural community of around 400 people close to the town of San Jacinto in the Maribios range of volcanoes in Western Nicaragua.

Although the community is connected to a water supply, no water ever flowed from their taps because the original water source was unable to meet the water needs of the community. In May 2007, Nuevas Esperanzas undertook a survey of Gracias a Dios to evaluate exactly how many houses are still without running water. This survey concluded that of the 70 houses in Gracias a Dios, only 22 have running water. The 21 families which could most benefit from rainwater harvesting systems were identified and as these include three pairs of adjacent houses which could share tanks, channeling water from both roofs to fill the tank, a proposal was drawn up for the construction of 18 tanks.

Location:	Gracias a Dios, San Jacinto	
Beneficiaries:	68 (14 families)	
Project objectives:	To provide a clean water supply for the 21 families in Gracias a Dios who live furthest away from the piped water supply through the construction of rainwater harvesting systems.	
Project activities:	Construction of rainwater harvesting systems, training in community participation, resolving conflict, social justice and cleaning and maintaining the rainwater harvesting tank.	
Total Cost:	\$38,484	
Donors:	St Paul's and St George's Church, Edinburgh, Olive Branch Mennonite Missions, World Vision Nicaragua	
Key Indicators:	Rainwater harvesting tanks constructed:	12
	Combined capacity of tanks:	269,000 litres
	Water supply provided (average):	46 litres per person per day



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Project report

Rainwater harvesting is now a familiar concept in the community of Gracias a Dios and over the last ten months 12 new tanks have been built.

Every beneficiary has a different story to tell about how their tank has made an impact on their daily life and how the experience of working together with others from the community has affected them. Throughout the project the construction of the tanks has been managed by a team of masons, two from León and two from the local community.

One of the local masons, Felix Rivera from Gracias a Dios and a beneficiary of the first rainwater harvesting project, is shown here working on the steps to lead down to the water collection point.



Each family provided the manual labour required working under the supervision of the masons everyday for two to three months while the tank was built.

The new ferro-cement tanks are already providing water for families in Gracias a Dios. The rains began in mid May and tropical storm Alma hit the Pacific side of Nicaragua at the end of May bringing some heavy rain along with it. So even the last of the tanks to be completed are now filling.

Just before the start of the wet season a workshop was held for all the beneficiaries. Many of those who attended spoke of the relief it has been to have a

good water supply next to the house. They also appreciated the way that the Nuevas Esperanzas team has taken time to get to know them and spend time with them in the community as well as overseeing the construction work. The tank of one beneficiary, José Eduardo Vega, was finished early enough to catch rain before the dry season started in December last year and he explained that managing it carefully he had water until March. Nuevas Esperanzas engineer Arturo Juárez explained how to check the water level, clear the gutters and maintain the tanks and water collection point. The water quality of the tanks has been tested and the water is definitely suitable for drinking but this is something the beneficiaries still find hard to believe!





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After any specific questions about the maintenance of the tanks were answered, the focus of the workshop moved on to how the community work together. Nuevas Esperanzas project coordinator, Jorge Murillo, gave a talk about the way every member of the community should work to help their neighbour, offering advice about ways to resolve conflicts when they arise. The talk also considered what social justice means for the relationship between Nuevas Esperanzas and the community as well as for the relationships between the community members themselves.



Looking ahead

At the start of the project, an urgent need for the construction of 18 rainwater harvesting tanks was identified. Funding was committed from Olive Branch Mennonite Missions, World Vision Nicaragua and St Paul's and St George's Church 10% Fund. Unfortunately the contribution from World Vision Nicaragua was much less than the amount that had been committed so to date only 12 of the 18 systems have been built.

For several months there have been problems with the mains water supply which reaches some parts of Gracias a Dios. Without this supply, the parts of the community not served by rainwater harvesting systems are struggling to manage their daily water needs and are asking for more tanks to be built. Nuevas Esperanzas is hoping to raise the funds required to continue with the project at Gracias a Dios this year and see all 18 of the originally planned systems built, if not more.



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Feedback received



María de la Cruz Centeno

Resident, Gracias a Dios

“It’s made a huge difference. Before, we didn’t have water here. We had to walk a long way and the pump was always broken. Now we have water right here in the house, thanks to God!”



Amparo Borda

Resident, Gracias a Dios

“The tank filled to within two feet of the top with the first storm this year. I shared the water with my neighbours and still have some left. Now we’re waiting for more rain!”



Justo Espinoza

Construction worker and resident

“It was a great experience, for me as well as for the beneficiaries of the project. For the beneficiaries it was great because the water problems here have created a huge crisis and the tanks are a great help. For me it was good to have work during the most difficult months of the year and a great blessing from God. We know that all good things come from God!”



Tom Kennedy

HM Ambassador to Costa Rica and Nicaragua

“It makes such incredibly good sense to harvest the excess of rainwater during the rainy season and store it for use in the dry season. But the methodology is all important. You have found a method that works. I wish you all the very best in extending your project.”

No.	Names	Number of family members	Roof area (m ²)	Recommended tank capacity (litres)	Number of times tank could be filled each year	Water provided by system		
						Average (litres per person per day)	Dry season (l/p/d)	Average (barrels per month)
1	Jose Eduardo Vega Mayorga	6	52	23,000	3.2	33.2	25.6	37.9
2	Franklin Miranda	4	66	23,000	4.0	63.3	38.3	48.1
3	Petrona Bordas	4	36	16,000	3.2	34.5	26.7	26.3
4	Maria Elena Estrada	6	76	23,000	4.6	48.6	25.6	55.4
5	Lucrecia Garcias	3	45	23,000	4.3	53.7	30.7	32.8
	Luz Marina Moreno	2	25					
6	Martin Delgado	4	65	23,000	4.0	62.3	38.3	47.4
7	Antonio Munguia	4	64	23,000	3.9	61.4	38.3	46.7
8	Angela Barreras	4	61	23,000	3.7	58.5	38.3	44.5
9	Maria Magdalena Centeno	4	31	23,000	1.9	29.7	38.3	22.6
10	Mariana Bordas	10	60	23,000	3.7	23.0	15.3	43.8
11	Amparo Bordas	6	88	23,000	5.4	56.3	25.6	64.2
12	Maria de la Cruz Centeno	8	66	23,000	4.9	28.2	13.9	48.1
	Gregoria Centeno	3	81					

Rainwater Harvesting, Gracias a Dios - Financial Statement

All values are given in US\$

Project Income

		<i>Totals</i>
Donations Received		
Olive Branch Mennonite Missions	20028.10	
St Paul's and St George's Church, Edinburgh	2269.30	
<i>Total donations received</i>		<i>22297.4</i>
Gifts in Kind		
World Vision Nicaragua (materials)	1008.27	
<i>Total Gifts in Kind</i>		<i>1008.27</i>
Contribution from Nuevas Esperanzas UK		15178.16
Total Project Income		38483.83

Project Expenses

				<i>Totals</i>
Project Staff¹				
	<i>hours</i>	<i>rate (\$/hr)²</i>	<i>cost</i>	
Project Manager/Civil Engineer	778	5.80	4512.40	
Project Manager/Civil Engineer	37	5.91	218.67	
Programme Director	59.5	8.84	525.98	
Programme Director	4	9.01	36.04	
Community Development Worker	238.5	6.45	1538.33	
Community Development Worker	19	6.58	125.02	
Administrator	82.5	4.93	406.73	
Finance/Admin Assistant	0.5	3.41	1.71	
Finance/Admin Assistant	20	3.47	69.40	
<i>Total project staff</i>				<i>7434.27</i>
Subsistence				
Staff subsistence			346.53	
<i>Total subsistence</i>				<i>346.53</i>
Construction foremen				
Salaries			6063.61	
Subsistence			1090.31	
<i>Total construction foremen</i>				<i>7153.92</i>
Materials				
Materials (donated)			1008.27	
Materials (purchased)			15066.33	
Refreshments for workshops			41.52	
<i>Total materials</i>				<i>16116.12</i>
Transport				
	<i>km</i>	<i>rate (\$/km)</i>	<i>cost</i>	
Use of project vehicles	8428	0.25	2107.00	
Public transport			437.88	
<i>Total transport</i>				<i>2544.88</i>
Total of Direct Project Costs				33595.72
Indirect Project Costs² (calculated as 15% of direct costs, excluding donated materials)				4888.12
Total Project Expenses				38483.83

Notes

¹ Rate includes salaries, health insurance, statutory bonuses, paid holiday and 30% non-productive time. Some salaries changed in May 2008 therefore costs for some staff are given at two different rates.

² Contribution towards office overheads, including rent, utilities, office equipment, non-project staff, etc